WHAT IS CLAIMED IS:

1. A method of treating a patient, comprising administering to said patient a protein comprising an amino acid sequence selected from the group consisting of:
   (a) amino acid residues 1 to 677 of SEQ ID NO: 2;
   (b) amino acid residues 2 to 677 of SEQ ID NO: 2;
   (c) amino acid residues 1 to 677 of SEQ ID NO: 2, wherein the protein has at least one conservative substitutions, and has choline acetyltransferase activity;
   (d) an amino acid sequence comprising a fragment of amino acid residues 1 to 677 of SEQ ID NO: 2; wherein the fragment has choline acetyltransferase activity;
   (e) a polypeptide which is at least 90% identical to the polypeptide of (a)-(d);
   (f) a polypeptide comprising at least 30 contiguous residues of SEQ ID NO: 2; and
   (g) a polypeptide comprising at least 50 contiguous residues of SEQ ID NO: 2.

2. The method of claim 1 wherein said patient suffers from a disorder involving the cholinergic system.

3. The method of claim 2, wherein the patient suffers from a nervous system disorder.

4. The method of claim 3, wherein said nervous system disorder is selected from the group consisting of: amyotrophic lateral sclerosis, Alzheimer disease, Parkinson's Disease, senile dementia, multi-infarct dementia, familial disautonomia, Huntington's Disease, mental retardation, memory loss, and myasthenia gravis.

5. The method of claim 2, wherein said disorder is selected from the group consisting of: gut and GI disorders, cord disorders, including movement, continence and sensation, stem disorders, including sleep, blood pressure, respiration, and balance, hypothalamus disorders, including temperature, respiration, and endocrine function, and limbic system disorders, including schizophrenia, memory disorders, and dementia.

6. The method of claim 1, wherein said protein comprises (a).

7. The method of claim 1, wherein said protein comprises (b).

8. The method of claim 1, wherein said protein comprises (c).

9. The method of claim 1, wherein said protein comprises (d).

10. The method of claim 1, wherein said protein comprises (e).

11. The method of claim 1, wherein said protein comprises (f).

12. The method of claim 1, wherein said protein comprises (g).

13. A method of treating a patient, comprising administering to said patient a protein comprising an amino acid sequence selected from the group consisting of:
(a) an amino acid sequence of the full-length polypeptide encoded by the cDNA in ATCC Deposit No. 75856;
(b) an amino acid sequence of the full-length polypeptide, excluding the N-terminal methionine residue, encoded by the cDNA in ATCC Deposit No. 75856;
(c) an amino acid sequence of the full-length polypeptide encoded by the cDNA in ATCC Deposit No. 75856, wherein the amino acid sequence has at least one conservative substitution, and has choline acetyltransferase activity;
(d) a fragment of the full-length polypeptide encoded by the cDNA in ATCC Deposit No. 75856, wherein the fragment has choline acetyltransferase activity;
(e) a polypeptide which is at least 90% identical to the polypeptide of (a)-(d);
(f) a polypeptide comprising at least 30 contiguous residues of the polypeptide encoded by the cDNA in ATCC Deposit No. 75856; and
(g) a polypeptide comprising at least 50 contiguous residues of the polypeptide encoded by the cDNA in ATCC Deposit No. 75856.

14. The method of claim 13 wherein said patient suffers from a disorder involving the cholinergic system.

15. The method of claim 14, wherein the patient suffers from a nervous system disorder.

16. The method of claim 15, wherein said nervous system disorder is selected from the group consisting of: amyotrophic lateral sclerosis, Alzheimer disease, Parkinson's Disease, senile dementia, multi-infarct dementia, familial disautonomia, Huntington's Disease, mental retardation, memory loss, and myasthenia gravis.

17. The method of claim 14, wherein said disorder is selected from the group consisting of: gut and GI disorders, cord disorders, including movement, continence and sensation, stem disorders, including sleep, blood pressure, respiration, and balance, hypothalamus disorders, including temperature, respiration, and endocrine function, and limbic system disorders, including schizophrenia, memory disorders, and dementia.

18. The method of claim 13, wherein said protein comprises (a).

19. The method of claim 13, wherein said protein comprises (b).

20. The method of claim 13, wherein said protein comprises (c).

21. The method of claim 13, wherein said protein comprises (d).

22. The method of claim 13, wherein said protein comprises (e).

23. The method of claim 13, wherein said protein comprises (f).

24. The method of claim 13, wherein said protein comprises (g).

25. A method for screening a compound for choline acetyltransferase agonist or antagonist activity, comprising the steps of: exposing a recombinant host cell expressing a polypeptide of the invention to the compound, and evaluating effect of said compound on the choline acetyl transferase activity to thereby determine if the compound has agonist or antagonist activity, wherein said polypeptide of the invention is selected from the group consisting of:
(a) amino acid residues 1 to 677 of SEQ ID NO: 2;
(b) amino acid residues 2 to 677 of SEQ ID NO: 2;
(c) amino acid residues 1 to 677 of SEQ ID NO: 2, wherein the protein has at least one conservative substitution, and choline acetyltransferase activity;
(d) an amino acid sequence comprising a fragment of amino acid residues 1 to 677 of SEQ ID NO: 2; wherein the fragment has choline acetyltransferase activity;
(e) a polypeptide which is at least 90% identical to the polypeptide of (a)-(d);
(f) a polypeptide comprising at least 30 contiguous residues of SEQ ID NO: 2; and
(g) a polypeptide comprising at least 50 contiguous residues of SEQ ID NO: 2.

26. The method of claim 25, wherein said protein comprises (a).

27. The method of claim 25, wherein said protein comprises (b).

28. The method of claim 25, wherein said protein comprises (c).

29. The method of claim 25, wherein said protein comprises (d).

30. The method of claim 25, wherein said protein comprises (e).

31. The method of claim 25, wherein said protein comprises (f).

32. The method of claim 25, wherein said protein comprises (g).

33. The method of claim 25 wherein said compound is an agonist.

34. The method of claim 33 wherein said agonist is selected from the group consisting of:
(a) small molecule;
(b) peptide; and
(c) antibody.

35. The method of claim 34, wherein said antibody is a monoclonal antibody.

36. The method of claim 34, wherein said antibody is a polyclonal antibody.

37. The method of claim 34, wherein said antibody is selected from the group consisting of:
(a) chimeric antibody;
(b) single chain antibody;
(c) humanized antibody; and
(d) Fab fragments.

38. The method of claim 25 wherein said compound is an antagonist.

39. The method of claim 38 wherein said antagonist is selected from the group consisting of:
(a) small molecule;
(b) peptide; and
(c) antibody.

40. The method of claim 39, wherein said antibody is a monoclonal antibody.

41. The method of claim 39, wherein said antibody is a polyclonal antibody.

42. The method of claim 39, wherein said antibody is selected from the group consisting of:
(a) chimeric antibody;
(b) single chain antibody;
(c) humanized antibody; and
(d) Fab fragments.

43. A method for screening a compound for choline acetyltransferase agonist or antagonist activity, comprising the steps of: exposing a recombinant host cell expressing a polypeptide of the invention to the compound, and evaluating effect of said compound on the choline acetyl transferase activity to thereby determine if the compound has agonist or antagonist activity, wherein said polypeptide of the invention is selected from the group consisting of:
(a) an amino acid sequence of the full-length polypeptide encoded by the cDNA in ATCC Deposit No. 75856;
(b) an amino acid sequence of the full-length polypeptide, excluding the N-terminal methionine residue, encoded by the cDNA in ATCC Deposit No. 75856;
(c) an amino acid sequence of the full-length polypeptide encoded by the cDNA in ATCC Deposit No. 75856, wherein the amino acid sequence has at least one conservative substitution, and has choline acetyltransferase activity;
(d) a fragment of the full-length polypeptide encoded by the cDNA in ATCC Deposit No. 75856, wherein the fragment has choline acetyltransferase activity;
(e) a polypeptide which is at least 90% identical to the polypeptide of (a)-(d);
(f) a polypeptide comprising at least 30 contiguous residues of polypeptide encoded by the cDNA in ATCC Deposit No. 75856; and
(g) a polypeptide comprising at least 50 contiguous residues of polypeptide encoded by the cDNA in ATCC Deposit No. 75856.

44. The method of claim 43, wherein said protein comprises (a).

45. The method of claim 43, wherein said protein comprises (b).

46. The method of claim 43, wherein said protein comprises (c).

47. The method of claim 43, wherein said protein comprises (d).

48. The method of claim 43, wherein said protein comprises (e).

49. The method of claim 43, wherein said protein comprises (f).

50. The method of claim 43, wherein said protein comprises (g).

51. The method of claim 43 wherein said compound is an agonist.

52. The method of claim 51 wherein said agonist is selected from the group consisting of:
(a) small molecule;
(b) peptide; and
(c) antibody.

53. The method of claim 52, wherein said antibody is a monoclonal antibody.

54. The method of claim 52, wherein said antibody is a polyclonal antibody.

55. The method of claim 52, wherein said antibody is selected from the group consisting of:
(a) chimeric antibody;
(b) single chain antibody;
(c) humanized antibody; and
(d) Fab fragments.

56. The method of claim 43 wherein said compound is an antagonist.

57. The method of claim 56 wherein said antagonist is selected from the group consisting of:
(a) small molecule;
(b) peptide; and
(c) antibody.

58. The method of claim 57, wherein said antibody is a monoclonal antibody.

59. The method of claim 57, wherein said antibody is a polyclonal antibody.

60. The method of claim 57, wherein said antibody is selected from the group consisting of:
(a) chimeric antibody;
(b) single chain antibody;

(c) humanized antibody; and
(d) Fab fragments.

61. A method of treating a patient, comprising administering to a patient an agonist of a protein comprising an amino acid sequence selected from the group consisting of:
(a) amino acid residues 1 to 677 of SEQ ID NO: 2;
(b) amino acid residues 2 to 677 of SEQ ID NO: 2;
(c) amino acid residues 1 to 677 of SEQ ID NO: 2, wherein the protein has at least one conservative substitution, and has choline acetyltransferase activity;
(d) an amino acid sequence comprising a fragment of amino acid residues 1 to 677 of SEQ ID NO: 2; wherein the fragment has choline acetyltransferase activity;
(e) a polypeptide which is at least 90% identical to the polypeptide of (a)-(d);
(f) a polypeptide comprising at least 30 contiguous residues of SEQ ID NO: 2; and
(g) a polypeptide comprising at least 50 contiguous residues of SEQ ID NO: 2.

62. The method of claim 61 wherein said patient suffers from a disorder involving the cholinergic system.

63. The method of claim 62, wherein the patient suffers from a nervous system disorder.

64. The method of claim 63, wherein said nervous system disorder is selected from the group consisting of: amyotrophic lateral sclerosis, Alzheimer disease, Parkinson's Disease, senile dementia, multi-infarct dementia, familial disautonomia, Huntington's Disease, mental retardation, memory loss, and myasthenia gravis.

65. The method of claim 62, wherein said disorder is selected from the group consisting of: gut and GI disorders, cord disorders, including movement, continence and sensation, stem disorders, including sleep, blood pressure, respiration, and balance, hypothalamus disorders, including temperature, respiration, and endocrine function, and limbic system disorders, including schizophrenia, memory disorders, and dementia.

66. The method of claim 61, wherein said protein comprises (a).

67. The method of claim 61, wherein said protein comprises (b).

68. The method of claim 61, wherein said protein comprises (c).

69. The method of claim 61, wherein said protein comprises (d).

70. The method of claim 61, wherein said protein comprises (e).

71. The method of claim 61, wherein said protein comprises (f).

72. The method of claim 61, wherein said protein comprises (g).

73. The method of claim 61 wherein said agonist is selected from the group consisting of:
(d) small molecule;
(e) peptide; and
(f) antibody.

74. The method of claim 73, wherein said antibody is a monoclonal antibody.

75. The method of claim 73, wherein said antibody is a polyclonal antibody.

76. The method of claim 73, wherein said antibody is selected from the group consisting of:
(d) chimeric antibody;
(e) single chain antibody;
(f) humanized antibody; and
(g) Fab fragments.

77. A method of treating a patient, comprising administering to a patient an agonist of a protein comprising an amino acid sequence selected from the group consisting of:
(a) an amino acid sequence of the full-length polypeptide encoded by the cDNA in ATCC Deposit No. 75856;
(b) an amino acid sequence of the full-length polypeptide, excluding the N-terminal methionine residue, encoded by the cDNA in ATCC Deposit No. 75856;
(c) an amino acid sequence of the full-length polypeptide encoded by the cDNA in ATCC Deposit No. 75856, wherein the amino acid sequence has at least one conservative substitution, and has choline acetyltransferase activity;
(d) a fragment of the full-length polypeptide encoded by the cDNA in ATCC Deposit No. 75856, wherein the fragment has choline acetyltransferase activity;
(e) a polypeptide which is at least 90% identical to the polypeptide of (a)-(d);
(f) a polypeptide comprising at least 30 contiguous residues of polypeptide encoded by the cDNA in ATCC Deposit No. 75856; and
(g) a polypeptide comprising at least 50 contiguous residues of polypeptide encoded by the cDNA in ATCC Deposit No. 75856.

78. The method of claim 77 wherein said patient suffers from a disorder involving the cholinergic system.

79. The method of claim 78, wherein the patient suffers from a nervous system disorder.

80. The method of claim 79, wherein said nervous system disorder is selected from the group consisting of: amyotrophic lateral sclerosis, Alzheimer disease, Parkinson's Disease, senile dementia, multi-infarct dementia, familial

disautonomia, Huntington's Disease, mental retardation, memory loss, and myasthenia gravis.

81. The method of claim 78, wherein said disorder is selected from the group consisting of: gut and GI disorders, cord disorders, including movement, continence and sensation, stem disorders, including sleep, blood pressure, respiration, and balance, hypothalamus disorders, including temperature, respiration, and endocrine function, and limbic system disorders, including schizophrenia, memory disorders, and dementia.

82. The method of claim 77, wherein said protein comprises (a).

83. The method of claim 77, wherein said protein comprises (b).

84. The method of claim 77, wherein said protein comprises (c).

85. The method of claim 77, wherein said protein comprises (d).

86. The method of claim 77, wherein said protein comprises (e).

87. The method of claim 77, wherein said protein comprises (f).

88. The method of claim 77, wherein said protein comprises (g).

89. The method of claim 77 wherein said agonist is selected from the group consisting of:
(a) small molecule;
(b) peptide; and
(c) antibody.

90. The method of claim 89, wherein said antibody is a monoclonal antibody.

91. The method of claim 89, wherein said antibody is a polyclonal antibody.

92. The method of claim 89, wherein said antibody is selected from the group consisting of:
(a) chimeric antibody;
(b) single chain antibody;
(c) humanized antibody; and
(d) Fab fragments.

93. A method of treating a patient, comprising administering to a patient an antagonist of a protein comprising an amino acid sequence selected from the group consisting of:
(a) amino acid residues 1 to 677 of SEQ ID NO: 2;
(b) amino acid residues 2 to 677 of SEQ ID NO: 2;
(c) amino acid residues 1 to 677 of SEQ ID NO: 2, wherein the protein has at least one conservative substitution, and has choline acetyltransferase activity;

(d) an amino acid sequence comprising a fragment of amino acid residues 1 to 677 of SEQ ID NO: 2; wherein the fragment has choline acetyltransferase activity;
(e) a polypeptide which is at least 90% identical to the polypeptide of (a)-(d);
(f) a polypeptide comprising at least 30 contiguous residues of SEQ ID NO: 2; and
(g) a polypeptide comprising at least 50 contiguous residues of SEQ ID NO: 2.

94. The method of claim 93 wherein said patient suffers from a disorder involving the cholinergic system.

95. The method of claim 94, wherein the patient suffers from a nervous system disorder.

96. The method of claim 95, wherein said nervous system disorder is selected from the group consisting of: amyotrophic lateral sclerosis, Alzheimer disease, Parkinson's Disease, senile dementia, multi-infarct dementia, familial disautonomia, Huntington's Disease, mental retardation, memory loss, and myasthenia gravis.

97. The method of claim 94, wherein said disorder is selected from the group consisting of: gut and GI disorders, cord disorders, including movement, continence and sensation, stem disorders, including sleep, blood pressure, respiration, and balance, hypothalamus disorders, including temperature, respiration, and endocrine function, and limbic system disorders, including schizophrenia, memory disorders, and dementia.

98. The method of claim 93, wherein said protein comprises (a).

99. The method of claim 93, wherein said protein comprises (b).

100. The method of claim 93, wherein said protein comprises (c).

101. The method of claim 93, wherein said protein comprises (d).

102. The method of claim 93, wherein said protein comprises (e).

103. The method of claim 93, wherein said protein comprises (f).

104. The method of claim 93, wherein said protein comprises (g).

105. The method of claim 93 wherein said antagonist is selected from the group consisting of:
(a) small molecule;
(b) peptide; and
(c) antibody.

106. The method of claim 105, wherein said antibody is a monoclonal antibody.

107. The method of claim 105, wherein said antibody is a polyclonal antibody.

108. The method of claim 105, wherein said antibody is selected from the group consisting of:
(a) chimeric antibody;
(b) single chain antibody;
(c) humanized antibody; and
(d) Fab fragments.

109. A method of treating a patient, comprising administering to a patient an antagonist of a polypeptide of amino acid sequence selected from the group consisting of:
(a) an amino acid sequence of the full-length polypeptide encoded by the cDNA in ATCC Deposit No. 75856;
(b) an amino acid sequence of the full-length polypeptide, excluding the N-terminal methionine residue, encoded by the cDNA in ATCC Deposit No. 75856;
(c) an amino acid sequence of the full-length polypeptide encoded by the cDNA in ATCC Deposit No. 75856, wherein the amino acid sequence has at least one conservative substitution, and has choline acetyltransferase activity;
(d) a fragment of the full-length polypeptide encoded by the cDNA in ATCC Deposit No. 75856, wherein the fragment has choline acetyltransferase activity;
(e) a polypeptide which is at least 90% identical to the polypeptide of (a)-(d);
(f) a polypeptide comprising at least 30 contiguous residues of polypeptide encoded by the cDNA in ATCC Deposit No. 75856; and
(g) a polypeptide comprising at least 50 contiguous residues of polypeptide encoded by the cDNA in ATCC Deposit No. 75856.

110. The method of claim 109 wherein said patient suffers from a disorder involving the cholinergic system.

111. The method of claim 110, wherein the patient suffers from a nervous system disorder.

112. The method of claim 111, wherein said nervous system disorder is selected from the group consisting of: amyotrophic lateral sclerosis, Alzheimer disease, Parkinson's Disease, senile dementia, multi-infarct dementia, familial disautonomia, Huntington's Disease, mental retardation, memory loss, and myasthenia gravis.

113. The method of claim 110, wherein said disorder is selected from the group consisting of: gut and GI disorders, cord disorders, including movement, continence and sensation, stem disorders, including sleep, blood pressure, respiration, and balance, hypothalamus disorders, including temperature, respiration, and endocrine function, and limbic system disorders, including schizophrenia, memory disorders, and dementia.

114. The method of claim 109, wherein said protein comprises (a).

115. The method of claim 109, wherein said protein comprises (b).

116. The method of claim 109, wherein said protein comprises (c).

117. The method of claim 109, wherein said protein comprises (d).

118. The method of claim 109, wherein said protein comprises (e).

119. The method of claim 109, wherein said protein comprises (f).

120. The method of claim 109, wherein said protein comprises (g).

121. The method of claim 109 wherein said antagonist is selected from the group consisting of:
(a) small molecule;
(b) peptide; and
(c) antibody.

122. The method of claim 121, wherein said antibody is a monoclonal antibody.

123. The method of claim 121, wherein said antibody is a polyclonal antibody.

124. The method of claim 121, wherein said antibody is selected from the group consisting of:
(a) chimeric antibody;
(b) single chain antibody;
(c) humanized antibody; and
(d) Fab fragments.

125. A method of diagnosing a disorder in a patient, said method comprising determining, in a sample from said patient, the level of a nucleic acid encoding a polypeptide comprising the amino acid sequence of SEQ ID NO: 2, wherein a level of said nucleic acid in said sample from said patient that differs from the level in a control sample indicates that said patient has a disorder.

126. The method of claim 125 wherein said disorder involves the cholinergic system.

127. The method of claim 126, wherein the patient suffers from a nervous system disorder.

128. The method of claim 127, wherein said nervous system disorder is selected from the group consisting of: amyotrophic lateral sclerosis, Alzheimer disease, Parkinson's Disease, senile dementia, multi-infarct dementia, familial disautonomia, Huntington's Disease, mental retardation, memory loss, and myasthenia gravis.

129. The method of claim 126, wherein said disorder is selected from the group consisting of: gut and GI disorders, cord disorders, including movement,

continence and sensation, stem disorders, including sleep, blood pressure, respiration, and balance, hypothalamus disorders, including temperature, respiration, and endocrine function, and limbic system disorders, including schizophrenia, memory disorders, and dementia.

130. A method of diagnosing a disorder in a patient, said method comprising determining, in a sample from said patient, the level of a nucleic acid encoding a polypeptide comprising the amino acid sequence of the cDNA contained in Deposit No. 75856, wherein a level of said nucleic acid in said sample from said patient that differs from the level in a control sample indicates that said patient has a disorder.

131. The method of claim 130 wherein said disorder involves the cholinergic system.

132. The method of claim 131, wherein the patient suffers from a nervous system disorder.

133. The method of claim 132, wherein said nervous system disorder is selected from the group consisting of: amyotrophic lateral sclerosis, Alzheimer disease, Parkinson's Disease, senile dementia, multi-infarct dementia, familial disautonomia, Huntington's Disease, mental retardation, memory loss, and myasthenia gravis.

134. The method of claim 131, wherein said disorder is selected from the group consisting of: gut and GI disorders, cord disorders, including movement, continence and sensation, stem disorders, including sleep, blood pressure, respiration, and balance, hypothalamus disorders, including temperature, respiration, and endocrine function, and limbic system disorders, including schizophrenia, memory disorders, and dementia.

135. A method of diagnosing a disorder in a patient, said method comprising determining, in a sample from said patient, the level of a polypeptide of amino acid sequence SEQ ID NO: 2, wherein a level of said polypeptide in said sample from said patient that differs from the level in a control sample indicates that said patient has a disorder.

136. The method of claim 135 wherein said disorder involves the cholinergic system.

137. The method of claim 136, wherein the patient suffers from a nervous system disorder.

138. The method of claim 137, wherein said nervous system disorder is selected from the group consisting of: amyotrophic lateral sclerosis, Alzheimer disease, Parkinson's Disease, senile dementia, multi-infarct dementia, familial disautonomia, Huntington's Disease, mental retardation, memory loss, and myasthenia gravis.

139. The method of claim 136, wherein said disorder is selected from the group consisting of: gut and GI disorders, cord disorders, including movement,

continence and sensation, stem disorders, including sleep, blood pressure, respiration, and balance, hypothalamus disorders, including temperature, respiration, and endocrine function, and limbic system disorders, including schizophrenia, memory disorders, and dementia.

140. A method of diagnosing a disorder in a patient, said method comprising determining, in a sample from said patient, the level of a polypeptide comprising the amino acid sequence of the cDNA contained in Deposit No. 75856, wherein a level of said polypeptide in said sample from said patient that differs from the level in a control sample indicates that said patient has a disorder.

141. The method of claim 140 wherein said disorder involves the cholinergic system.

142. The method of claim 141, wherein the patient suffers from a nervous system disorder.

143. The method of claim 142, wherein said nervous system disorder is selected from the group consisting of: amyotrophic lateral sclerosis, Alzheimer disease, Parkinson's Disease, senile dementia, multi-infarct dementia, familial disautonomia, Huntington's Disease, mental retardation, memory loss, and myasthenia gravis.

144. The method of claim 141, wherein said disorder is selected from the group consisting of: gut and GI disorders, cord disorders, including movement, continence and sensation, stem disorders, including sleep, blood pressure, respiration, and balance, hypothalamus disorders, including temperature, respiration, and endocrine function, and limbic system disorders, including schizophrenia, memory disorders, and dementia.

145. A method of treating a patient, comprising administering to said patient a polynucleotide which encodes a protein comprising an amino acid sequence selected from the group consisting of:
(a) amino acid residues 1 to 677 of SEQ ID NO: 2;
(b) amino acid residues 2 to 677 of SEQ ID NO: 2;
(c) amino acid residues 1 to 677 of SEQ ID NO: 2, wherein the protein has at least one conservative substitution, and has choline acetyltransferase activity;
(d) an amino acid sequence comprising a fragment of amino acid residues 1 to 677 of SEQ ID NO: 2; wherein the fragment has choline acetyltransferase activity;
(e) a polypeptide which is at least 90% identical to the polypeptide of (a)-(d);
(f) a polypeptide comprising at least 30 contiguous residues of SEQ ID NO: 2; and
(g) a polypeptide comprising at least 50 contiguous residues of SEQ ID NO: 2.

146. The method of claim 145 wherein said patient suffers from a disorder involving the cholinergic system.

147. The method of claim 146, wherein the patient suffers from a nervous system disorder.

148. The method of claim 147, wherein said nervous system disorder is selected from the group consisting of: amyotrophic lateral sclerosis, Alzheimer disease, Parkinson's Disease, senile dementia, multi-infarct dementia, familial disautonomia, Huntington's Disease, mental retardation, memory loss, and myasthenia gravis.

149. The method of claim 146, wherein said disorder is selected from the group consisting of: gut and GI disorders, cord disorders, including movement, continence and sensation, stem disorders, including sleep, blood pressure, respiration, and balance, hypothalamus disorders, including temperature, respiration, and endocrine function, and limbic system disorders, including schizophrenia, memory disorders, and dementia.

150. The method of claim 145, wherein said protein comprises (a).

151. The method of claim 145, wherein said protein comprises (b).

152. The method of claim 145, wherein said protein comprises (c).

153. The method of claim 145, wherein said protein comprises (d).

154. The method of claim 145, wherein said protein comprises (e).

155. The method of claim 145, wherein said protein comprises (f).

156. The method of claim 145, wherein said protein comprises (g).

157. A method of treating a patient, comprising administering to said patient a polynucleotide which encodes a protein comprising an amino acid sequence selected from the group consisting of:

(a) an amino acid sequence of the full-length polypeptide encoded by the cDNA in ATCC Deposit No. 75856;
(b) an amino acid sequence of the full-length polypeptide, excluding the N-terminal methionine residue, encoded by the cDNA in ATCC Deposit No. 75856;
(c) an amino acid sequence of the full-length polypeptide encoded by the cDNA in ATCC Deposit No. 75856, wherein the amino acid sequence has at least one conservative substitution, and has choline acetyltransferase activity;
(d) a fragment of the full-length polypeptide encoded by the cDNA in ATCC Deposit No. 75856, wherein the fragment has choline acetyltransferase activity;
(e) a polypeptide which is at least 90% identical to the polypeptide of (a)-(d);
(f) a polypeptide comprising at least 30 contiguous residues of polypeptide encoded by the cDNA in ATCC Deposit No. 75856; and
(g) a polypeptide comprising at least 50 contiguous residues of polypeptide encoded by the cDNA in ATCC Deposit No. 75856.

158. The method of claim 157 wherein said patient suffers from a disorder involving the cholinergic system.

159. The method of claim 158, wherein the patient suffers from a nervous system disorder.

160. The method of claim 159, wherein said nervous system disorder is selected from the group consisting of: amyotrophic lateral sclerosis, Alzheimer disease, Parkinson's Disease, senile dementia, multi-infarct dementia, familial disautonomia, Huntington's Disease, mental retardation, memory loss, and myasthenia gravis.

161. The method of claim 158, wherein said disorder is selected from the group consisting of: gut and GI disorders, cord disorders, including movement, continence and sensation, stem disorders, including sleep, blood pressure, respiration, and balance, hypothalamus disorders, including temperature, respiration, and endocrine function, and limbic system disorders, including schizophrenia, memory disorders, and dementia.

162. The method of claim 157, wherein said protein comprises (a).

163. The method of claim 157, wherein said protein comprises (b).

164. The method of claim 157, wherein said protein comprises (c).

165. The method of claim 157, wherein said protein comprises (d).

166. The method of claim 157, wherein said protein comprises (e).

167. The method of claim 157, wherein said protein comprises (f).

168. The method of claim 157, wherein said protein comprises (g).